

REMOVAL OF ARSENIC AND OTHER ANIONS USING NOVEL ADSORBENTS

ABSTRACT OF THE DISCLOSURE

To more effectively remove contaminants from fluid streams, several types of metal precursors can be incorporated onto highly ordered mesoporous molecular sieves, such as 5 SBA-15, without producing of clogging effects within pore structures. Lanthanum and aluminum are the most favorable incorporated metals in terms of their adsorption capacities and fluid velocities. The lanthanum impregnated SBA-15 also has a very strong selectivity for arsenic because its adsorption capacities do not deteriorate even if several other anionic species, such as sulfate and nitrate, are found in high concentrations in the fluid along with 10 any arsenic. As a result, these hybrid materials have many advantages for use in POE/POU applications, among others, due to its rapid and high adsorption capacity, and its high selectivity of arsenic for removal from the fluid stream.